

MULTIMEDIA



UNIVERSITY

STUDENT ID NO

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# MULTIMEDIA UNIVERSITY

## FINAL EXAMINATION

TRIMESTER 2, 2018/2019

### BFN3144 – FINANCIAL DERIVATIVES

(All sections / Groups)

13 MARCH 2019

9.00 A.M. – 11.00 A.M.

(2 Hours)

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#### INSTRUCTIONS TO STUDENTS

1. This question paper consists of 6 pages. There are a total of 4 questions.
2. Answer **ALL** questions.
3. Marks are shown at the end of each question.

Answer all questions in the answer booklet provided.

### QUESTION 1 (25 MARKS)

(a) List four derivatives products traded under Bursa Malaysia Derivatives. (8 marks)

(b) The table below is sourced from Bursa Malaysia Derivatives and answer the following questions (i), (ii) and (iii).

Contract			Contract Prices (RM)				Volume	Open Interest
			Open	High	Low	Settlement		
KLCI OPTIONS (OKLI)								
Calls								
Products	Date	ISIN						
OKLI Jul 18 Call 31/07/2018 1,660	02/07/2018	MYOKLIC0KS73	0.00	0.00	0.00	40.20	0	0
OKLI Jul 18 Call 31/07/2018 1,670	02/07/2018	MYOKLIC01S75	0.00	0.00	0.00	35.00	0	0
OKLI Jul 18 Call 31/07/2018 1,680	02/07/2018	MYOKLIC02S74	0.00	0.00	0.00	30.30	0	20
OKLI Jul 18 Call 31/07/2018 1,690	02/07/2018	MYOKLIC03S73	0.00	0.00	0.00	26.00	0	20

(Source: Bursa Malaysia Derivatives, December 2018)

(i) Differentiate between volume and open interest. (6 marks)

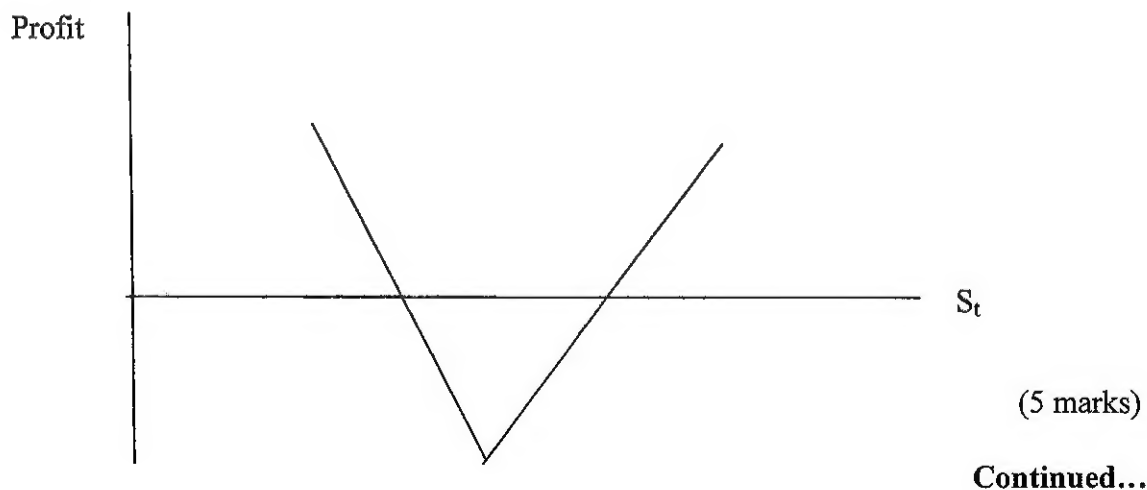
(ii) Explain two benefits of using derivative instruments (futures/option) which is based on Composite Index. (6 marks)

(iii) What are the added values of using CI options compared to CI futures? (5 marks)

### QUESTION 2 (25 MARKS)

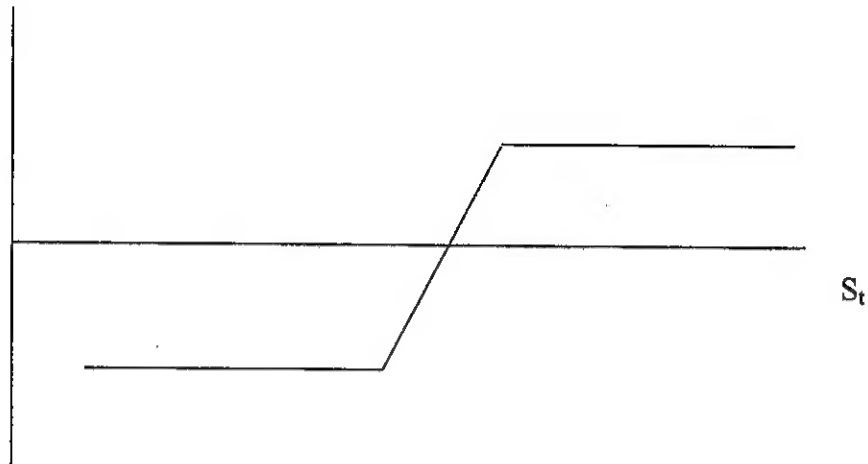
(a) Name the strategies based on the diagrams below. Explain how to form the strategies.

(i)



(ii)

Profit



(5 marks)

- (b) You, as the fund managers at Best Performed Fund Management Berhad, manages an equity portfolio. You intend to use at-the money option to hedge against the risk. Current Composite Index (CI) is standing at 1680. Given the CI options below, design a hedging strategy and fill in the payoff table. Also, draw a payoff diagram.

Call	Put
1600 @ 10 points	1600 @ 2 points
1680 @ 5 points	1680 @ 5 points
1750 @ 2 points	1750 @ 10 points

The payoff table is as follows.

Underlying prices	Spot position	Option position	Premium	Net Payoff
1550				
1600				
1680				
1700				
1750				

(15 marks)

Continued....

**QUESTION 3 (25 MARKS)**

- (a) One of the assumptions under Black Scholes Option Pricing model is no issuance of dividend. Explain how to include dividend payment in the Black-Scholes model. (5 marks)
- (b) Explain the main difference between a European and an American option. (5 marks)
- (c) Based on the information below, apply Black-Scholes Options Pricing Model (BSOPM) to calculate the correct price of a put option.

Stock price = RM11.00

Exercise Price = RM10.00

Interest rate = 4% p.a.

Time remaining to maturity = 90 days

Standard deviation = 0.50

Decompose the put value found in part (c) into intrinsic value and time value.

(15 marks)

**QUESTION 4 (25 MARKS)**

- (a) The news is taken from The Star Online 27 June 2018.

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**Malaysian debt risk on uptrend**

PETALING JAYA: The risk on Malaysian debt has increased, with the credit default swap (CDS) rising to a one-year high amid concerns on the country's macroeconomic outlook.

The CDS of the five-year ringgit bond – an indication of the strength of the government debt papers – was at 106 basis points (bps) at the time of writing. It has steadily gone up since January this year.

The highest the CDS traded was in September 2015 when it hit 242 bps during the time when oil prices were at their low.

Prior to 2015, the CDS also surged in mid-2014 when the 1Malaysia Development Bhd crisis just broke out, leading to an open confrontation between former Prime Minister Datuk Seri Najib Tun Razak and some of his supporters.

**Continued....**

Maybank Kim Eng analyst Winson Phoon said that the widening of the CDS spread was due to a combination of the deteriorating broad emerging market outlook and higher risk attached to Malaysia because of uncertainties post-general election (GE), as well as the negative news flows regarding the RM1 trillion debt.

"The CDS spread is a gauge of market fear. A widening CDS spread suggests a change in perceived market risk in sovereign credit. But it does not necessarily mean that rating agencies will downgrade Malaysia's rating," he told *StarBiz*.

Phoon pointed to September 2015 when the CDS spread was the highest and yet Malaysia's sovereign rating was maintained at A3/A-.

The Pakatan Harapan government has tagged Malaysia's debt at RM1.09 trillion, including contingent liabilities of RM199bil. The previous government had stated national debt at RM686.8bil and did not take into account contingent liabilities that had already crystallised.

Maybank Kim Eng had previously in a report said that Malaysian debt market investors were well aware of the general level of debt, including the contingent liabilities.

A fund manager said that the weak overall macro-economic outlook was not contributing to the Malaysian debt situation, and that there was a global trade war brewing between the US and China.

"Malaysia is an open economy and the risk of a trade war could impact its trade surplus," he said.

He said that the CDS was one of the indicators for investors to judge a country's or company's situation.

"It is not an important indicator, as there are other factors to look into such as trade numbers and Bank Negara reserves," he added.

Malaysia's CDS is lower than similar-dated Indonesian debt instruments, which is at 136 bps, but generally higher than similar instruments of the Philippines and Thailand. However, the CDS of Malaysia has sped up since the May 9 GE.

Foreign funds have been paring down their holdings in Malaysian debt securities since April. According to official data, the outflow in April was at RM4.7bil, and accelerated in May by selling more than RM12bil post-election and in the unfavourable external environment.

**Continued....**

The ringgit weakened beyond RM4 per dollar for the first time last week, the level last seen in January.

According to Bloomberg, Malaysia's CDS performance since the GE on May 9 suggests investors see a decent chance of a ratings downgrade.

It said since the close of business on May 8, Malaysia's CDS spread has widened by 30 bps compared to a change of six bps for Indonesia and the Philippines, which are both rated two notches lower on rating agencies Moody's and S&P's scales.

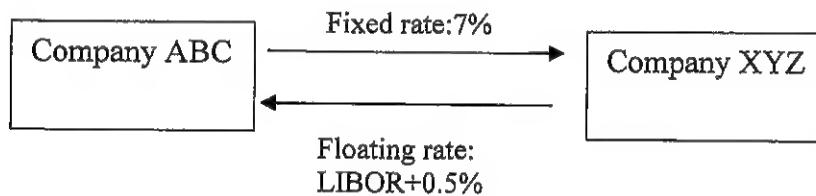
The news also pointed out that the deteriorating derivatives outlook has been mirrored by the portfolio outflows from Malaysia's equity and bond markets.

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Source: The Star Online, June 2018.

Explain what credit default swap is and how you could use CDS against government sovereign risk. (10 marks)

(b) Based on the diagram below, answer the following questions



- (i) What is the swap? (5 marks)
- (ii) If the notional amount is \$3,000,000 and the 1-year LIBOR rate is 6%, what is the net payment? Who is the payer? (10 marks)

**End of Page**

Table: Cumulative Normal Distribution

d	N(d)	d	N(d)	d	N(d)	d	N(d)	d	N(d)	d	N(d)
-3.00	.0013	-1.58	.0571	-0.76	.2236	0.06	.5239	0.86	.8051	1.66	.9515
-2.95	.0016	-1.56	.0594	-0.74	.2297	0.08	.5319	0.88	.8106	1.68	.9535
-2.90	.0019	-1.54	.0618	-0.72	.2358	0.10	.5398	0.90	.8159	1.70	.9554
-2.85	.0022	-1.52	.0643	-0.70	.2420	0.12	.5478	0.92	.8212	1.72	.9573
-2.80	.0026	-1.50	.0668	-0.68	.2483	0.14	.5557	0.94	.8264	1.74	.9591
-2.75	.0030	-1.48	.0694	-0.66	.2546	0.16	.5636	0.96	.8315	1.76	.9608
-2.70	.0035	-1.46	.0721	-0.64	.2611	0.18	.5714	0.98	.8365	1.78	.9625
-2.65	.0040	-1.44	.0749	-0.62	.2676	0.20	.5793	1.00	.8414	1.80	.9641
-2.60	.0047	-1.42	.0778	-0.60	.2743	0.22	.5871	1.02	.8461	1.82	.9656
-2.55	.0054	-1.40	.0808	-0.58	.2810	0.24	.5948	1.04	.8508	1.84	.9671
-2.50	.0062	-1.38	.0838	-0.56	.2877	0.26	.6026	1.06	.8554	1.86	.9686
-2.45	.0071	-1.36	.0869	-0.54	.2946	0.28	.6103	1.08	.8599	1.88	.9699
-2.40	.0082	-1.34	.0901	-0.52	.3015	0.30	.6179	1.10	.8643	1.90	.9713
-2.35	.0094	-1.32	.0934	-0.50	.3085	0.32	.6255	1.12	.8686	1.92	.9726
-2.30	.0107	-1.30	.0968	-0.48	.3156	0.34	.6331	1.14	.8729	1.94	.9738
-2.25	.0122	-1.28	.1003	-0.46	.3228	0.36	.6406	1.16	.8770	1.96	.9750
-2.20	.0139	-1.26	.1038	-0.44	.3300	0.38	.6480	1.18	.8810	1.98	.9761
-2.15	.0158	-1.24	.1075	-0.42	.3373	0.40	.6554	1.20	.8849	2.00	.9772
-2.10	.0179	-1.22	.1112	-0.40	.3446	0.42	.6628	1.22	.8888	2.05	.9798
-2.05	.0202	-1.20	.1151	-0.38	.3520	0.44	.6700	1.24	.8925	2.10	.9821
-2.00	.0228	-1.18	.1190	-0.36	.3594	0.46	.6773	1.26	.8962	2.15	.9842
-1.98	.0239	-1.16	.1230	-0.34	.3669	0.48	.6844	1.28	.8997	2.20	.9861
-1.96	.0250	-1.14	.1271	-0.32	.3745	0.50	.6915	1.30	.9032	2.25	.9878
-1.94	.0262	-1.12	.1314	-0.30	.3821	0.52	.6985	1.32	.9066	2.30	.9893
-1.92	.0274	-1.10	.1357	-0.28	.3897	0.54	.7054	1.34	.9099	2.35	.9906
-1.90	.0287	-1.08	.1401	-0.26	.3974	0.56	.7123	1.36	.9131	2.40	.9918
-1.88	.0301	-1.06	.1446	-0.24	.4052	0.58	.7191	1.38	.9162	2.45	.9929
-1.86	.0314	-1.04	.1492	-0.22	.4129	0.60	.7258	1.40	.9192	2.50	.9938
-1.84	.0329	-1.02	.1539	-0.20	.4207	0.62	.7324	1.42	.9222	2.55	.9946
-1.82	.0344	-1.00	.1587	-0.18	.4286	0.64	.7389	1.44	.9251	2.60	.9953
-1.80	.0359	-0.98	.1635	-0.16	.4365	0.66	.7454	1.46	.9279	2.65	.9960
-1.78	.0375	-0.96	.1685	-0.14	.4443	0.68	.7518	1.48	.9306	2.70	.9965
-1.76	.0392	-0.94	.1736	-0.12	.4523	0.70	.7580	1.50	.9332	2.75	.9970
-1.74	.0409	-0.92	.1788	-0.10	.4602	0.72	.7642	1.52	.9357	2.80	.9974
-1.72	.0427	-0.90	.1841	-0.08	.4681	0.74	.7704	1.54	.9382	2.85	.9978
-1.70	.0446	-0.88	.1894	-0.06	.4761	0.76	.7764	1.56	.9406	2.90	.9981
-1.68	.0465	-0.86	.1949	-0.04	.4841	0.78	.7823	1.58	.9429	2.95	.9984
-1.66	.0485	-0.84	.2005	-0.02	.4920	0.80	.7882	1.60	.9452	3.00	.9986
-1.64	.0505	-0.82	.2061	0.00	.5000	0.82	.7939	1.62	.9474	3.05	.9989
-1.62	.0526	-0.80	.2119	0.02	.5080	0.84	.7996	1.64	.9495		
-1.60	.0548	-0.78	.2177	0.04	.5160						

This table shows the probability  $[N(d)]$  of observing a value less than or equal to  $d$ . For example, as illustrated, if  $d$  is  $-2.4$ , then  $N(d)$  is  $.0094$ .